

What is claimed is:

1. A method of driving a display panel, comprising:

carrying out luminance setting operations such that luminance is set,
two or more times and to a different luminance setting value each time, so
5 that the set luminance is changed with the elapsing of driving time.

2. The method of driving a display panel according to claim 1, wherein
the luminance setting values are determined from measured luminance
information, and luminance is corrected so as to match with the determined
luminance setting values.

3. A method of driving a display panel wherein pixels are driven,
luminance information is captured from the pixels, correction values are
calculated from the measured luminance information and a luminance
setting value, the correction values are stored in the correction memory, and
driving amount is corrected in accordance with the correction memory, the
10 method comprising:
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carrying out luminance setting operations such that luminance is set
two or more times and to a different luminance setting value each time, so
that the set luminance is changed with the elapsing of driving time.

4. The method of driving a display panel according to claim 1, wherein
20 each of the luminance setting values does not exceed a preceding luminance
setting value.

5. A method of driving a display panel, comprising:

carrying out luminance correcting operations such that luminance is corrected two or more times at predetermined intervals and each of the intervals between the luminance correction operations differ, whereby the starting interval of recorrection operation is varied.

6. The method of driving a display panel according to claim 5, wherein the intervals between the luminance correction operations are varied according to the luminance degradation characteristics of display elements.

7. A method of driving a display panel wherein pixels are driven, luminance information is captured from the pixels, correction values are calculated from the measured luminance information and a luminance setting value, the correction values are stored in the correction memory, and driving amount is corrected in accordance with the correction memory, the method comprising:

carrying out a series of renewal operations on the correction memory for all of the pixels at specified intervals.

8. The method of driving a display panel according to claim 7, wherein the series of renewal operations on the correction memory, instead of being carried out at specified intervals, is repeated continuously.

9. The method of driving a display panel according to claim 2, wherein the operations for correcting luminance are carried out during periods other than video output periods.

10. The method of driving a display panel according to claim 3, wherein the operations for capturing luminance information from the pixels comprise at least illuminating the pixels during periods other than video output periods.

5 11. The method of driving a display panel according to claim 10, wherein the periods other than video output periods are vertical blanking periods, and luminance information from a given number of grouped pixels is captured during each of these periods.

10 12. The method of driving a display panel according to claim 10, wherein adjacent pixels are not successively driven.

15 13. The method of driving a display panel according to claim 3, wherein the correction value calculations are carried out using both measured luminance information and degradation characteristics related to either the luminance of elements for which luminance has been measured or to the luminance of pixels for which luminance has been measured.

20 14. The method of driving a display panel according to claim 13, wherein the display panel has a light-emitting surface with phosphors, and instead of degradation characteristics related to either the luminance of the elements or the luminance of the pixels, degradation characteristics related to the luminance of the phosphors are used.

15. The method of driving a display panel according to claim 13,

wherein the degradation characteristics are measured in advance, rates of degradation are calculated based on the driving integral amount of every pixel, correction values are calculated using both the measured luminance information and the rates of degradation, and the correction memory is renewed.

16. The method of driving a display panel according to claim 2, wherein until the difference between the measured luminance information and the luminance setting value reaches a fixed value or less, correction operations are repeated continuously.

17. The method of driving a display panel according to claim 3, wherein the captured luminance information is driving current.

18. The method of driving a display panel according to claim 3, wherein the captured luminance information is that of the starting point of the illumination of pixels.

19. The method of driving a display panel according to claim 3, wherein the display panel has at least an anode electrode and a light-emitting surface having a plurality of phosphors on the anode electrode, and the captured luminance information is anode current.

20. A method of driving a display panel, comprising, in an initial stage after fabrication of the panel, illuminating all of pixels in the panel one at a time, capturing luminance information from the pixels, setting luminance

two or more times and to a different luminance setting value each time, calculating correction values from the captured luminance information and the luminance setting value, and storing the correction values in a correction value memory as initial correction values.

5 21. The method of driving a display panel according to claim 3, wherein input luminance signals are corrected in accordance with the correction values stored in the correction memory.

22. The method of driving a display panel according to claim 3, wherein the amplitude value or the pulse width of driving signals applied to the display panel is corrected in accordance with the correction values stored in the correction memory.

23. The method of driving a display panel according to claim 3, wherein the correction values are calculated so as to incorporate data for γ correction for each pixel and stored to the correction memory.

15 24. The method of driving a display panel according to claim 3, wherein a gray scale realization method for the display panel is either amplitude control or pulse width control.

25. The method of driving a display panel according to claim 3, wherein a gray scale realization method for the display panel is a system of gray scale such that except when an output is completed, a current or voltage value for amplitude control is changed only in the direction of increase.

26. The method of driving a display panel according to claim 3, wherein a gray scale realization method for the display panel is a system of driving such that amplitude control and pulse width control are carried out simultaneously.

5 27. The method of driving a display panel according to claim 26, wherein for the gray scale control, the amplitude control is such that using m high-order bits of gray scale data represented by n bits, where m and n are arbitrary integers, a current or voltage value controlled by amplitude is outputted at intervals of $1/2^m$ maximum value and the pulse width control is
10 such that using $(n-m)$ low-order bits, pulse width is controlled at intervals of $1/2^{(n-m)}$ maximum value.

28. The method of driving a display panel according to claim 26, wherein the LSB of current or voltage value output is outputted twice, or the LSB or output pulse width is outputted twice, or the LSB of both are
15 outputted twice.

29. The method of driving a display panel according to claim 26, wherein the number of divisions of output for pulse width control is greater than the number of divisions of output for amplitude control.

30. The method of driving a display panel according to claim 3, wherein
20 a gray scale realization method of the display panel is a driving method for realizing gray scale comprising switching between amplitude control or pulse width control and a system of gray scale control in which amplitude

control and pulse width control are carried out simultaneously.

31. The method of driving a display panel according to claim 30, wherein, when the luminance signal level to be outputted is equal to or less than a reference value, amplitude control or pulse width control is carried out, and when equal to or greater than a reference value, the system of gray scale control where amplitude control and pulse width control are carried out simultaneously is carried out to realize gray scale.

32. The method of driving a display panel according to claim 31, wherein the reference value is a number of output gray scale levels and is set to be the number of gray scale levels on the pulse width control side in the system of gray scale control where amplitude control and pulse width control are carried out simultaneously.

33. The method of driving a display panel according to claim 30, wherein the gray scale realization system is switched according to time to realize gray scale.

34. A luminance correction device, comprising luminance resetting means for carrying out luminance setting operations such that luminance is set two or more times and to a different luminance setting value each time, and wherein the set luminance is changed with the elapsing of driving time.

35. The luminance correction device according to claim 34, further comprising luminance correcting means for correcting luminance so as to

match with the luminance setting value and means for determining the luminance setting value from measured luminance information.

36. A luminance correction device for a display panel, comprising luminance resetting means for carrying out luminance setting operations such that luminance is set two or more times and to a different luminance setting value each time, driving means for driving pixels, luminance measuring means for capturing luminance information from the pixels, a correction memory for storing correction values, calculating means for calculating correction values from the measured luminance information and the luminance setting value and storing the correction values to the correction memory, and correcting means for correcting driving amount in accordance with the correction memory.

37. The luminance correction device according to claim 34, wherein each of the luminance setting values does not exceed a preceding luminance setting value.

38. A luminance correction device, comprising luminance correcting means for carrying out luminance correcting operations such that luminance is corrected two or more times at predetermined intervals and each of the intervals between the luminance correction operations differ, and wherein the starting interval of recorrection operation is varied.

39. A luminance correction device according to claim 38, wherein the intervals between the luminance correction operations are varied according

to luminance degradation characteristics of display elements.

40. A luminance correction device for a display panel, comprising driving means for driving pixels, luminance measuring means for capturing luminance information from the pixels, a correction memory for storing
5 correction values, calculating means for calculating correction values from measured luminance information and the luminance setting value and storing the correction values to the correction memory, correcting means for correcting driving amount in accordance with the correction memory, and controlling means for carrying out a series of renewal operations on the
10 correction memory for all of the pixels at specified intervals.

41. The luminance correction device for a display panel according to claim 40, wherein the controlling means is such that the series of renewal operations on the correction memory, instead of being carried out at specified intervals, is repeated continuously.

15 42. The luminance correction device according to claim 35, wherein the operations for correcting luminance are carried out during periods other than video output periods.

43. The luminance correction device for a display panel according to claim 40, further comprising controlling means for controlling the
20 operations for capturing luminance information from the pixels so that at least the pixels are illuminated during periods other than video output periods.

44. The luminance correction device for a display panel according to claim 43, wherein the periods other than video output periods are vertical blanking periods, and luminance information from a given number of grouped pixels is captured during each of these periods.

5 45. The luminance correction device for a display panel according to claim 43, wherein the controlling means is such that adjacent pixels are not successively illuminated.

46. The luminance correction device for a display panel according to claim 36, comprising, instead of the calculating means, calculation
10 correcting means for calculating correction values using both the measured luminance information and degradation characteristics related to either the luminance of elements for which luminance has been measured or to the luminance of pixels for which luminance has been measured and for renewing a correction memory.

15 47. The luminance correction device for a display panel according to claim 46, wherein the display panel has a light-emitting surface of phosphors, and wherein the calculation correcting means is such that, instead of the degradation characteristics related to either the luminance of the elements or the pixels, degradation characteristics related to the
20 luminance of the phosphors is used.

48. The luminance correction device for a display panel according to claim 46, wherein the calculation correcting means is such that the

degradation characteristics are measured in advance, rates of degradation are calculated based on the rates on the driving integral of driving current for every pixel, correction values are calculated using both the measured luminance information and the rates of degradation, and the correction memory is renewed.

49. The luminance correction device for a display panel according to claim 35, further comprising controlling means for controlling the correction operations so that until the difference between the measured luminance information and the luminance setting value reaches a fixed value or less, the correction operations are repeated continuously.

50. The luminance correction device for a display panel according to claim 36, wherein the luminance measuring means is such that the captured luminance information is driving current.

51. The luminance correction device for a display panel according to claim 36, wherein the luminance measuring means is such that the capturing luminance information is that of the starting point of the illumination of pixels.

52. The luminance correction device for a display panel of claim 36, wherein the display panel has at least an anode electrode and a light-emitting surface having a plurality of phosphors on the anode electrode, and the captured luminance information is anode current.

53. The luminance correction device for a display panel, comprising:

luminance resetting means for carrying out luminance setting operations such that luminance is set two or more times and to a different luminance setting value each time; and

5 controlling means for, in the initial stage after fabrication of the panel, illuminating all of the pixels in the panel one at a time, capturing luminance information from the pixels, calculating correction values from the luminance information and a luminance setting value, and storing the correction values to a correction memory as initial correction values.

10 54. The luminance correction device for a display panel according to claim 36, wherein the correcting means for correcting driving amount in accordance with correction values stored in a correction memory corrects input luminance signals.

15 55. The luminance correction device for a display panel according to claim 36, wherein the correcting means for correcting driving amount in accordance with correction values stored in a correction memory corrects the amplitude or the pulse width of driving signals applied to the display panel in accordance with the correction values stored in the correction memory.

20 56. A driving device for a display panel, the device comprising the luminance correction device for a display panel according to claim 36, and wherein a gray scale realization method for the display panel is amplitude control or pulse width control.

57. A driving device for a display panel, the device comprising the luminance correction device for a display panel according to claim 36, and wherein a gray scale realization method for the display panel is a system of gray scale such that except when an output is completed, a current or voltage value for amplitude control is changed only in the direction of increase.

58. A gray scale driving device for a display panel, the device comprising the luminance correction device for a display panel according to claim 36, and wherein a gray scale realization method of the display panel is a system of driving such that amplitude control and pulse width control are carried out simultaneously.

59. The driving device for a display panel according to claim 58, wherein for the gray scale control, the amplitude control is such that using m high-order bits of gray scale data represented by n bits, where m and n are arbitrary integers, a current or voltage value controlled by amplitude is outputted at intervals of $1/2^m$ maximum value and the pulse width control is such that using $(n-m)$ low-order bits, pulse width is controlled at intervals of $1/2^{(n-m)}$ maximum value.

60. The driving device for a display panel according to claim 58, wherein the LSB of current or voltage value output is outputted twice, or the LSB or output pulse width is outputted twice, or the LSB of both are outputted twice.

61. The driving device for a display panel according to claim 58, wherein the number of divisions of output for pulse width control is greater than the number of divisions of output for amplitude control.

5 62. A driving device for a display panel, comprising a luminance correction device for a display panel of claim 36, and wherein a gray scale realization method of the display panel is a driving method for realizing gray scale comprising switching between amplitude control or pulse width control and a system of gray scale control in which amplitude control and pulse width control are carried out simultaneously.

10 63. The driving device for a display panel according to claim 62, further comprising means for realizing gray scale by, when the luminance signal level to be outputted is equal to or less than a reference value, carrying out amplitude control or pulse width control, and when equal to or greater than a reference value, carrying out the system of gray scale control where
15 amplitude control and pulse width control are carried out simultaneously.

64. The driving device for a display panel according to claim 63, wherein the reference value is a number of output gray scale levels and is set to be the number of gray scale levels on the pulse width control side in the system of gray scale control where amplitude control and pulse width
20 control are carried out simultaneously.

65. The driving device for a display panel according to claim 62, further comprising a means for realizing gray scale by switching the gray scale

realization system according to time.

66. The driving device for a display panel according to claim 56, wherein a correction memory has, for each pixel, a number of values equal to the number of levels of amplitude value.

5 67. The driving device for a display panel according to claim 56, wherein the correction memory has, for each pixel, values that incorporate data for γ correction.

10 68. A driving device for a display panel, the device comprising the luminance correction device according to claim 36, and wherein at least two of the correction memory, the correcting means, the calculating means, and the controlling means are combined.

69. An image display device comprising the luminance correction device according to claim 36.

15 70. A light source comprising the luminance correction device according to claim 36.